

L Number	Hits	Search Text	DB	Time stamp
1	242	modular with bay\$1	USPAT; US-PGPUB	2002/08/08 20:32
4	3	pci same (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:33
7	1	5758103.pn.	USPAT; US-PGPUB	2002/08/08 20:30
10	104	modular with bay\$1	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:32
15	0	pci same (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:33
20	2	mini with pci	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:35
25	0	mpci same (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:36
30	0	\$MPCI and (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:37
35	0	\$MPCI and (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:38
38	17	MPCI	USPAT; US-PGPUB	2002/08/08 20:42
41	8	mini and (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:59
44	1	5822184.pn.	USPAT; US-PGPUB	2002/08/08 20:49
47	3	((peripheral with component with interconnect) and (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 21:00
50	5998	pcmcia	USPAT; US-PGPUB	2002/08/08 20:56
53	7	(modular with bay\$1) same pcmcia	USPAT; US-PGPUB	2002/08/08 20:56
56	1215	mini and modular\$1	USPAT; US-PGPUB	2002/08/08 21:00
59	73	((peripheral with component with interconnect) or pci) and (mini and modular\$1)	USPAT; US-PGPUB	2002/08/08 21:08
62	112	mini same modular\$1	USPAT; US-PGPUB	2002/08/08 21:08
65	5	((peripheral with component with interconnect) or pci) and (mini and modular\$1)) and (mini same modular\$1)	USPAT; US-PGPUB	2002/08/08 21:01
68	36	mini same modular\$1	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 21:08
73	0	((peripheral with component with interconnect) or pci) and (mini same modular\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 21:08

09/353,938

L Number	Hits	Search Text	DB	Time stamp
1	242	modular with bay\$1	USPAT; US-PGPUB	2002/08/08 20:32
4	3	pci same (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:33
7	1	5758103.pn.	USPAT; US-PGPUB	2002/08/08 20:30
10	104	modular with bay\$1	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:32
15	0	pci same (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:33

US-PAT-NO: 5537343
DOCUMENT-IDENTIFIER: US 5537343 A

TITLE: Digital assistant system having a host computer with a docking bay and a moveable heat sink for cooling a docked module

DATE-ISSUED: July 16, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kikinis; Dan	Saratoga	CA	N/A	N/A
Dornier; Pascal	Sunnyvale	CA	N/A	N/A
Seiler; William J.	Scotts Valley	CA	N/A	N/A

US-CL-CURRENT: 361/687; 361/686 ; 361/709

ABSTRACT:

A personal digital assistant module with a local CPU, memory, and I/O interface has a host interface comprising a bus connected to the local CPU and a connector at a surface of the personal digital assistant for interfacing to a bus connector of a host general-purpose computer, providing direct bus communication between the personal digital assistant and the host general-purpose computer. In an embodiment, the personal digital assistant also has a means for storing a security code.

The personal digital assistant according to the invention forms a host/satellite combination with a host computer having a docking bay, wherein upon docking a docking protocol controls access by the host to memory of the personal digital assistant based on one or more passwords provided by a user to the host. In another embodiment the personal digital assistant also has an expansion port connected to the local CPU, and expansion peripheral devices may be connected and operated through the expansion port.

In one embodiment, a personal digital assistant module and a computer having docking bays is provided also having movable heat sink structures for contacting and cooling docked modules.

15 Claims, 49 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 41

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Detailed Description Text - DETX:

Power modules such as module 1111 may be plugged into a connector on a charging module separate from the notebook computer, using the same connector used for plugging into the Notebus via a module bay of framework 1011, and recharged for later use with a modular notebook computer according to the invention. This allows a user to keep spare power modules ready for use, and to recharge modules without connecting the computer itself to a charging unit. Moreover, the provision of power modules allows a user to provide more or less portable time to the notebook computer by using one or more than one power module.

Detailed Description Text - DETX:

In another embodiment of the invention the heat sink pan may incorporate a closed liquid-cooling system with or without a small circulation pump and heat exchanger. A mini refrigeration system may be incorporated with such a design as the inventor has intended assuming technological advancements in battery capacities and system efficiencies. In another aspect, heat pipes may be used as an instrument for heat transfer.

Detailed Description Text - DETX:

The technology disclosed with reference to FIGS. 42 through 44C may be combined with that disclosed relative to a modular computer having docking bays and a micro personal digital assistant configured to be docked in such a docking bay. One may, for example, provide the modular computer of FIG. 41 with a hinged upper unit (see FIG. 43), such that docked modules may be contacted and cooled in the manner indicated with reference to FIGS. 42-44C.

Claims Text - CLTX:

a modular computer having a plurality of module bays configured in a common plane and opening to at least one edge of the modular computer with at least one module bay configured to dock the micro personal digital assistant and establish digital communication between the micro personal digital assistant over the host interface bus;

Claims Text - CLTX:

wherein the modular computer comprises one or more movable elements configured as a heat sink and positionable to contact one of the micro personal digital assistants docked in one of the module bays, for withdrawing excess heat energy from the micro personal digital assistant.

US-PAT-NO: 5420750
DOCUMENT-IDENTIFIER: US 5420750 A

TITLE: Removable disk drive modules for computer unit

DATE-ISSUED: May 30, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Freige; D. Edmond	Los Altos	CA	N/A	N/A
Hibbs; Richard N.	Palo Alto	CA	N/A	N/A

US-CL-CURRENT: 361/695; 361/726

ABSTRACT:

Computer apparatus with modular disk drive memory packages adapted to be used/replaced in a common memory stage where each module is to be inserted/renewed in a compartment (bay) thereof.

8 Claims, 15 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 12

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Abstract Text - ABTX:

Computer apparatus with modular disk drive memory packages adapted to be used/replaced in a common memory stage where each module is to be inserted/renewed in a compartment (bay) thereof.

Detailed Description Text - DETX:

Communications cables to unit CB plug onto 25-pin D-type connectors. A 25-pin female bi-directional parallel port connector and 25-pin male asynchronous "RS-232" connector are mounted on the MB-Bus backplane board. These are right-angle connectors which face the rear of base module CB. RS-485 (cluster) cables can be attached to two 8 pin mini-DIN type connectors located on the SGL-100. There are also two female 25-pin D-type connectors for connection to synchronous RS232 devices on an SGL-100 I/O panel.

Detailed Description Text - DETX:

The computer can support two kinds of keyboards. One keyboard can be a CTOS/BTOS I-Bus style keyboard with a K5 key "top-lay-out" and additional keycap legends for DOS operation. It can connect to the system through a cable with an SDL connector on one end and a 6 pin mini-DIN connector on the other end.

Detailed Description Text - DETX:

The keyboards are detachable and connected either to a CTOS/BTOS monitor or to an SGV-100 module (via coiled cable). A standard 6 pin mini-DIN style connector is contemplated.

Detailed Description Text - DETX:

The video display cabling for a Custom monitor contains "power-enable", "keyboard interface", "mouse interface", separate sync signals, and video input to the monitor (from SGV-100 through a 25-pin male "D" subminiature connector). This allows the keyboard and mouse to be plugged into the monitor, rather than into the SGV-100 module. The video cable from a standard VGA monitor plugs directly onto the SGV-100 backpanel into a 15-pin "D" subminiature (same as on standard IBM monitors). Two 6-pin mini-DINs are provided; one for the keyboard and one for the mouse.

Claims Text - CLTX:

1. A desktop computer control unit comprising: base platform means; motherboard means, mounted on said platform means; deck means superposed to form an air-cooling plenum above the motherboard means; a memory array mounted on said deck means, and characterized by a memory enclosure with two or more like rectangular modular removable memory modules in respective bays therein, each module including drive-lock means including handle means; and air draft means disposed operatively adjacent the motherboard means and adapted and arranged to draw cooling-air thereacross coolingly; each said bay comprising a cavity adapted to receive a memory module in slide-in, slide-out fashion from one side of said control unit and being arranged to interact with said drive-lock means so as to pull said module fully-into the bay when said handle means is suitably displaced for this.

US-PAT-NO: 5987260
DOCUMENT-IDENTIFIER: US 5987260 A

TITLE: System for coupling communication link to port connector including predefined ground pin when peripheral is connected to port connector and not mounted in compartment

DATE-ISSUED: November 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Arnold; Kenneth W.	Houston	TX	N/A	N/A
Tumlinson; James J.	Tomball	TX	N/A	N/A

US-CL-CURRENT: 710/74; 710/62

ABSTRACT:

A computer system has a housing and a central processing unit located inside the housing. The computer system also has a peripheral unit mounted in and removable from the housing and a communication port connector exposed on the outside of the housing for connection of and communication with external devices. The computer system has a dedicated communication link in the housing for communication with the peripheral unit. The computer system also has a device for connecting the peripheral unit to the port connector when the peripheral unit is removed from the housing and circuitry for coupling the dedicated communications link to the port connector when the peripheral unit is connected to the communication port connector. The computer system has a device for holding a portable disk drive constructed for insertion into an internal drive bay of a computer unit having a shell for covering and protecting the disk drive. The device has a cable assembly including a parallel port connector for connecting to the computer unit and a non-parallel port connector for connecting to a connector of the disk drive.

26 Claims, 6 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

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Brief Summary Text - BSTX:

Many portable computer systems have internal bays which house removable modular internal floppy disk drives. When the floppy disk drive is removed, another device, such as a CD-ROM drive, may be inserted in the internal bay. Portable computer systems may also have free-standing external floppy disk drives with cables designed for use with a parallel port of the portable computer system.

Detailed Description Text - DETX:

The microcontroller 124 and MSIO 122 are interfaced to an Industry Standard Architecture (ISA) bus 114. The ISA bus 114 is coupled to an ISA bridge 112 which provides communication between a Peripheral Component Interconnect (PCI) bus 116 and the ISA bus 114.

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US-PAT-NO: 5822547
DOCUMENT-IDENTIFIER: US 5822547 A

TITLE: Method and apparatus for providing a portable computer with hot pluggable modular bays

DATE-ISSUED: October 13, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Boesch; Shannon C.	Georgetown	TX	N/A	N/A
Haley; Charles L.	Temple	TX	N/A	N/A

US-CL-CURRENT: 710/302; 710/107 ; 710/48

ABSTRACT:

A computer system 10, such as a notebook computer, uses a modular bay 12 to receive optional devices 14. Buffer circuits 36 selectively isolate the device 14 in the modular bay from respective buses 34. An SMI handler, or similar executable routine, recognizes events which affect the modular bay 12 (such as insertion or removal of a device 14 from the modular bay 12), and performs the necessary routines to re-enumerate the system so that the device 14 is properly connected to its bus 34 and that the system software is aware of the hardware connected to computer 10.

9 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

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Detailed Description Text - DETX:

Many notebook systems provide for a docking station. A docking station allows connection of the computer 10 to devices which may not be suitable for portable use. For example, the docking station may provide an interface and a physical connection to a local area network. It may also provide standard bus slots (such as Industry Standard Architecture (ISA) or Peripheral Connect Interface (PCI) slots) for the user to add peripheral cards, such as advanced video cards or sound cards. The system designer may chose to disable the modular bay (by disabling all buffers 36 and re-enumerating the system) while the computer 10 is connected to a docking station.

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7	1	5758103.pn.	USPAT; US-PGPUB	2002/08/08 20:30
10	104	modular with bay\$1	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:32
15	0	pci same (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:33
20	2	mini with pci	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:35
25	0	mpci same (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:36
30	0	\$MPCI and (modular with bay\$1)	EPO; JPO; DERWENT; IBM_TDB	2002/08/08 20:37
35	0	\$MPCI and (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:38
38	17	MPCI	USPAT; US-PGPUB	2002/08/08 20:42
41	8	mini and (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:43
44	1	5822184.pn.	USPAT; US-PGPUB	2002/08/08 20:49
47	3	(peripheral with component with interconnect) and (modular with bay\$1)	USPAT; US-PGPUB	2002/08/08 20:50

US-PAT-NO: 5987547

DOCUMENT-IDENTIFIER: US 5987547 A

TITLE: Network computer with interchangeable hard drive and data transceiver

DATE-ISSUED: November 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Panasik; Carl M.	Garland	TX	N/A	N/A
Rajasekaran; Periagaram K.	Richardson	TX	N/A	N/A

US-CL-CURRENT: 710/301; 709/250

ABSTRACT:

A network/portable computer (18) includes a modular bay (20) which can receive either a hard drive (22) or a data transceiver (24) for establishing a wireless network connection. When the network/portable computer (18) is in the local area covered by the network (10), the data transceiver (24) is installed to use the network (10) for storage and retrieval of data. When used in a remote area, where a network connection cannot be established, the hard drive (22) is installed in the modular bay (20) to provide a full featured computer.

18 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

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Detailed Description Text - DETX:

Portable computers 16 are also similar to desktop PCs, although the components are miniaturized where possible to conserve weight and size. For example, the display is generally a LCD (liquid crystal display) rather than a CRT (cathode ray tube). The hard drive in a portable computer is a smaller form factor. Generally speaking, the main chassis of the portable computer is not capable of holding as many mass storage devices as a desktop computer. Accordingly, manufacturers provide modular bays and PC Card slots (also referred to as PCMCIA slots) to allow the user to configure the computer with additional peripherals such as a second hard drive, a CD-ROM, network interface, modems and so on.

US-PAT-NO: 5841994
DOCUMENT-IDENTIFIER: US 5841994 A

TITLE: Portable computer with multiple zoom port interface

DATE-ISSUED: November 24, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Boesch; Shannon C.	Georgetown	TX	N/A	N/A
Juenger; Randall E.	Belton	TX	N/A	N/A

US-CL-CURRENT: 710/113; 710/301

ABSTRACT:

A computer has multiple PC Card slots, each capable of receiving a ZOOM video device and providing that device access to the frame buffer through a Video Feature Port (VFP) on the graphics controller. Additionally, a docking station may also access the frame buffer through the VFP. Access may be controlled by a variety of predetermined priority or user selection schemes.

6 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

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Detailed Description Text - DETX:

FIG. 1 illustrates a perspective view of a computer system 10 having two PC Card slots 12 for receiving PCMCIA and CardBus devices and a modular bay 14 for receiving one of a plurality of modular devices, such as a floppy drive, hard disk drive, CD-ROM drive, magneto-optical (MO) drive, battery, or cellular telecommunication device. The computer system 10 includes a main housing 16, within which the computer electronics are housed. The PC Card slots 12 and modular bay 14 are accessible through the housing. A battery 17 is placed next to the modular bay 14. A keyboard 18 is placed at the top of the main housing 16. Keyboard 18, in the preferred embodiment, includes a pointing device, such as touch pad 19. A display 20 is attached to the main housing 16. Typically, the display 20 is connected to the main housing 16 by a hinge, such that the display 20 can be folded away from the main housing 16 when the computer 10 is in use and folded flush with the main housing 16 for portability when the computer 10 is inactive. For a multimedia computer, speakers 22 are shown as provided in the main housing 16.

US-PAT-NO: 5680126
DOCUMENT-IDENTIFIER: US 5680126 A

TITLE: Modular portable computer

DATE-ISSUED: October 21, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kikinis; Dan	Sratoga	CA	N/A	N/A

US-CL-CURRENT: 341/22; 341/26 ; 341/32 ; 361/686

ABSTRACT:

A modular computer has a framework with module bays for receiving CPU modules, power modules, and peripheral function modules such as floppy and hard disk drives. The framework has a built-in compressed bus and a variety of function modules which can be plugged into any one of the module bays. Function modules include, but are not limited to, CPU, power, floppy disk, hard disk, RAM memory, LAN communication, modem, FAX communication, and data acquisition. In some embodiments function modules are provided for communicating with separate input means, such as voice, keyboards, and pen-pads. In one aspect the module bays and the function modules are configured according to dimensional and connective standards of the Personal Computer Memory Card International Association. In another aspect a modular portable computer has a flexible, rollable, keyboard with a system for transmitting keystroke signals by magnetic induction.

7 Claims, 44 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 31

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Claims Text - CLTX:

4. A modular computer as in claim 1 wherein the docking bay and the functional module are configured to a Personal Computer Memory Card International Association (PCMCIA) standard.

US-PAT-NO: 6404626
DOCUMENT-IDENTIFIER: US 6404626 B1

TITLE: Integrated connector module for personal computers

DATE-ISSUED: June 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Low; Chor Leng	Singapore	N/A	N/A	SG
Huang; Hai	Singapore	N/A	N/A	SG

US-CL-CURRENT: 361/686; 361/737 ; 439/928.1

ABSTRACT:

A built-in integrated connector module for a portable computer includes a support plate that attaches to a mini-PCI card and two communication jacks. Electronic interconnection such as a flex cable or wiring is provided between the jack and the mini-PCI card. The entire module is secured in supporting structures provided within the housing of a portable computer such that the module may be installed reliably and conveniently.

25 Claims, 16 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 7

----- KWIC -----

Abstract Text - ABTX:

A built-in integrated connector module for a portable computer includes a support plate that attaches to a mini-PCI card and two communication jacks. Electronic interconnection such as a flex cable or wiring is provided between the jack and the mini-PCI card. The entire module is secured in supporting structures provided within the housing of a portable computer such that the module may be installed reliably and conveniently.

Brief Summary Text - BSTX:

The present invention relates to the miniaturization of personal computers. In particular, the present invention relates to the installation and use of mini-PCI cards in portable computers.

Brief Summary Text - BSTX:

One of the most important features available on personal computers (PC's) is the ability to connect the personal computer to external communication networks. By connecting to external communication networks, such as telephone lines and computer networks, personal computers can transmit data to, and receive data from, other remotely-located computers. In conventional desktop computers, one or more computer cards or modules provide this communication function. The computer cards typically mount in an expansion bay of the

computer and connect to a PCI (Peripheral Component Interconnect) connector or to some other bus standard connector (such as, for example, an Extended Industry Standard Architecture bus connector) provided in the desktop computer. The computer card includes circuitry and a connector for interfacing with a particular external communication network. Thus, for example, a card that interfaces with a telephone line includes a modem and a connector (or telephone jack) that mates with an appropriate telephone cable to couple the computer to a telephone line. The modem translates signals appearing on the telephone line to a format and protocol that can be understood by the computer, and similarly, converts signals from the computer to a format and protocol that can be transmitted over the telephone lines. Other computer cards also are available for interfacing the personal computer to other communication networks such as a local area network (LAN) using an Ethernet connector. In conventional desktop systems, these other computer cards can be mounted in other slots in the expansion bay.

Brief Summary Text - BSTX:

Portable computers are being produced with ever increasing functions, and in ever smaller packages. Portable computers typically provide telecommunication and networking functions through peripheral cards. Such cards usually connect to the motherboard via a Peripheral Component Interconnect (PCI) bus. The PCI card mounts in a PCI bus slot, while the external connector or jack usually is soldered directly onto the printed circuit motherboard. Recently, mini-PCI cards have been developed in which interconnection modules for connecting to peripheral telecommunication lines may be integrated into the portable computer housing and chassis as built-in features.

Brief Summary Text - BSTX:

A Mini-PCI card has been developed in which interconnection to both telephone lines and a local area network (LAN) are supported. However, due to the limited space within the housing of the portable computer, it is a challenging task to allocate space to accommodate the two communication jacks needed for interfacing with the external communication networks, especially when the necessity of a reliable and sturdy mechanical support is considered. The traditional method of soldering onto the motherboard needs to be improved, as this method does not give long term reliability when the user repeatedly plugs and unplugs the connections during usage. It would be more desirable to have a built-in interconnection in a portable computer which can be produced as a hardware module to facilitate repairs and replacements.

Brief Summary Text - BSTX:

According to the preferred embodiment of the present invention, the interconnection module provides a support plate and a riser board for supporting a mini-PCI card and the communication jack or jacks. A flex cable or wiring electrically connects the jacks and the mini-PCI card. The support board supports the riser board, which includes a connector assembly for coupling the PCI card to the system motherboard. The entire interconnection module may be reliably and conveniently fitted into supporting structures provided within the housing of a portable computer.

Brief Summary Text - BSTX:

In the preferred embodiment, a mini-PCI card, having a modem or an integrated modem and LAN interconnect, attaches to the riser board and the supporting plate. A flex cable effectively interfaces the mini-PCI card and the RJ11 and RJ45 jacks to minimize the space requirement such that the jacks and the flex cable may be fitted and secured into the computer housing in a space only

fractionally larger than the size of the jacks. The riser board includes a connector assembly that couples the mini-PCI card to the motherboard. This modular system not only provides integration using very limited space, but also allows for ease of installation, replacement and repair, since no screws, nuts or bolts are required.

Detailed Description Text - DETX:

The North bridge 104 couples the CPU 102 and memory 106 to the peripheral devices in the system through a Peripheral Component Interconnect (PCI) bus 112 or other expansion bus, such as an Extended Industry Standard Architecture (EISA) bus. The present invention, however, is not limited to any particular type of expansion bus, and thus various buses may be used, including a high speed PCI bus. Various peripheral devices 121 that implement the PCI protocol may reside on the PCI bus 112, as well. The PCI devices may include any of a variety of peripheral devices such as, for example, video accelerators, audio cards, hard or floppy disk drives, Small Computer Systems Interface (SCSI) adapters and the like.

Detailed Description Text - DETX:

The computer system also preferably includes a graphics controller 116 that couples to the bridge logic 104 via an expansion bus 112. As shown in FIG. 4, the expansion bus 112 comprises an Advanced Graphics Port (AGP) bus. Alternatively, the graphics controller 116 may couple to bridge logic 104 through the PCI bus 112. As one skilled in the art will understand, the graphics controller 116 controls the rendering of text and images on a display device 118. The graphics controller 116 may embody a typical graphics accelerator generally known in the art to render three-dimensional data structures on display 118. These data structures can be effectively shifted into and out of main memory 106 via the expansion bus 114 and bridge logic 104. The graphics controller 116 therefore may be a master of the expansion bus (including either PCI or AGP bus) enabling the graphics controller 116 to request and receive access to a target interface within the bridge logic unit 104, including the memory control unit. This mastership capability permits the graphics controller 116 to access main memory 106 without the assistance of the CPU 102.

Detailed Description Text - DETX:

As will be apparent to one skilled in the art, the bridge logic 104 includes a PCI interface to permit master cycles to be transmitted and received by bridge logic 104. The bridge logic 104 also includes an interface for initiating and receiving cycles to and from components on the AGP bus 114. The display 118 comprises any suitable electronic display device upon which an image or text can be represented. A suitable display device may include, for example, a liquid crystal display (LCD), a thin film transistor (TFT), a virtual retinal display (VRD), or any other type of suitable display device for a computer system.

Detailed Description Text - DETX:

In accordance with preferred embodiment, the computer system includes an integrated connector module 27 coupled to the PCI bus 112. The integrated connector module 27 preferably installs permanently within the computer system and couples the computer system to one or more external communication networks 75.

Detailed Description Text - DETX:

The computer system also may include a Personal Computer Memory Card International Association (PCMCIA) drive (not shown) coupled to the PCI bus 112. The PCMCIA drive is accessible from the outside of the computer and accepts one or more expansion cards that are housed in special PCMCIA cards, enclosures which are approximately the size of credit cards but slightly thicker. Accordingly, PCMCIA ports are particularly advantageous in laptop computer systems, in which space is at a premium. A PCMCIA card typically includes one connector that attaches to the PCMCIA drive, and additional connectors may be included for attaching cables or other devices to the card outside of the computer. Accordingly, various types of PCMCIA cards are available, including memory expansion cards.

Detailed Description Text - DETX:

If other secondary expansion buses are provided in the computer system, another bridge logic device typically couples the PCI bus 112 to that expansion bus. This bridge logic is sometimes referred to as a "South bridge," reflecting its location vis-a-vis the North bridge in a typical computer system drawing. In FIG. 4, the South bridge 122 couples the PCI bus 112 to an Industry Standard Architecture (ISA) bus 126 and to an Integrated Drive Electronics (IDE) bus 164. The IDE bus 164 typically interfaces input and output devices such as a CD ROM drive, a Digital Video Disk (DVD) drive, a hard disk drive, and one or more floppy disk drives. Various ISA-compatible devices are shown coupled to the ISA bus 126, including a BIOS ROM 144. The BIOS ROM 144 is a memory device that stores commands that instruct the computer how to perform basic functions such as sending video data to the display or accessing data on hard and floppy disk drives. In addition, the BIOS ROM 144 may be used to store power management instructions for hardware-based (or "legacy") power management systems or to store register definitions for software-based power management systems. The BIOS instructions also enable the computer to load the operating system software program into main memory during system initialization, also known as the "boot" sequence. The BIOS ROM 144 typically is a "nonvolatile" memory device, which means that the memory contents remain intact even when the computer 100 powers down. By contrast, the contents of the main memory 106 typically are "volatile" and thus are lost when the computer shuts down.

Detailed Description Text - DETX:

Referring still to FIG. 4, many of the computer system components physically reside on the system motherboard 100. Alternatively, some of the components that are shown as part of the motherboard 100 may reside on modules that plug-in to the motherboard. Thus, for example, the CPU 102 and North Bridge logic 104 may reside on a separate module that plugs-in to the motherboard 100, instead of being directly mounted on the motherboard. In accordance with normal convention, the motherboard typically includes a number of sockets that couple to one or more of the various system busses, such as the PCI bus 112. These sockets permit peripheral devices to be coupled to the motherboard 100.

Detailed Description Text - DETX:

Referring still to FIG. 1A, the integrated connector module 27 preferably includes an RJ11 jack 24, an RJ45 jack 26, a riser board 50, support plate 28, flex cable 29 and a mini-PCI card 30 for the telephone and local area network interconnection. As shown in FIGS. 1A and 5, the support plate 28 preferably includes a standoff 33, which is adapted to receive a screw for attaching the support plate 28 to the chassis 10. Standoff 33 attaches to motherboard 100 and chassis 10 at locations K1 and K2, respectfully. The dashed lines in FIGS. 1A and 5 show the manner in which the integrated connector module 27 is secured to the motherboard 100, chassis 10, and housing 21.

Detailed Description Text - DETX:

The integrated connection module will now be described in greater detail with reference to FIGS. 3A-D and FIG. 6. As best seen in FIG. 3A, jacks 24 and 26 are positioned adjacent each other to minimize the amount of space. The upper portion of the flex cable 29 wraps around and above a portion of the support plate 28 from the back of jacks 24, 26. As seen in FIG. 6, three standoffs 57 are provided on support plate 28. The mini PCI card 30 is secured to the standoffs 57 by screws that extend through apertures on the riser board 50 and insulating layer 37. The mini-PCI card 30 couples electrically to a connector assembly on the riser board 50. In the preferred embodiment, a BTB Connector 56 electronically connects the riser board 50 to the PCI card 30. The jacks 24, 26 are also provided with spring clips (not shown) extending from the top of the jacks to provide EMI grounding. In this embodiment, the support plate 28 is constructed from conductive metallic material, which directly contacts the spring clips extending from the jacks, and thus further serves as a grounding connection (in addition to providing mechanical support). The support plate 28 preferably includes a clip 53 that connects electrically to the keyboard pan (not shown) to reduce electromagnetic interference. In the preferred embodiment, the support plate 28 includes two tabs 51 extending downwardly at the back of the two jacks 24, 26 to provide additional mechanical support. As best seen in FIG. 3C and FIG. 6, the riser board 50 includes a lower plug connector 55 that extends downwardly from the riser board 50, through a slot 39 in insulating layer 37. Referring to FIGS. 1A and 6, when the support plate 28 is properly positioned in the housing of the computer, the lower plug connector 55 of the riser board 50 electrically connects to the motherboard 100 (FIG. 5) when the module 27 is properly fitted into the housing 21.

Detailed Description Text - DETX:

Referring now to FIGS. 2A-F, the manner in which jacks 24, 26 attach to the flex cable 29 will now be described in greater detail. The two jacks 24, 26 preferably are adjoined side-by-side to form a double jack, with LED 32 positioned above the RJ45 jack, and metallic pins 34 extending from the bottom of the jacks 24, 26. Jacks 24 and 26 preferably are secured to support plate 28 using adhesive paste, such as 3M 444 adhesive. The metallic pins 34 are inserted into openings in the flex cable 29 and electrically connect the jacks 24, 26 to flex cable 29. In the preferred embodiment a piece of stiffener 36 and the corresponding end of flex cable 29 are laminated together by a modified acrylic adhesive. The stiffener 36 preferably is comprised of a dielectric material, such as FR4, with an approximate thickness of 1.5 mm. The two jacks 24, 26 are then mounted onto the flex-stiffener laminate which has access holes 37 through which the metallic pins 34 from the bottom of the jacks extend. The metallic pins 34 preferably are soldered onto the flex cable 29 to ensure a proper electrical connection. In addition, two other openings 38 are provided through which the plastic positioning pins 25 (shown in FIG. 1C) on the ridges of the housing 21 are inserted. The positioning pins 25 thus serve as positional guides and mechanically support the jacks 24, 26 by limiting lateral movement of the jacks once they are installed. The flex cable 29 bends at 90 degrees around the back and top of the jacks 24, 26, such that the flex cable 29 occupies a minimum amount of space. The second end 40 of the flex cable 29 contains the pin connector actuators and pin housing 42 for interfacing with the PCI card 30. As shown in FIG. 2C, part Q2 comprises a piece of 3M epoxy 460 applied between a modem connector housing Q3 and the flex cable 29 to enhance the unmated strength of the connection. The electrical wiring in the flex cable 29 is designed to turn 180 degrees at the top of the jacks since the mini PCI card is positioned behind the jacks.

Detailed Description Text - DETX:

While the present invention has been described particularly with references to the aforementioned figures with emphasis on an interconnect module for a double jack consisting of the RJ11 and RJ45 jacks, it should be understood that the figures are for illustration only and should not be taken as limitation on the invention. For example, although flex cable is the most preferred means for interconnecting the jack and the mini-PCI card, other electronic connections, such as wiring connection, are considered equivalents. In the case of wire connection, a wire connector would be needed as an interface, and more space is required. The wires are preferably clipped or contained together for ease of installation. Wire connections would reduce the overall cost of the module, provided that there is sufficient space in the computer. Similarly, connectors other than RJ11 and RJ45 jacks may be used to connect to other external communication networks, as desired.

Detailed Description Text - DETX:

It is clear that the method and apparatus of the present invention has utility in many applications where built-in interconnection for peripheral functions is required. For example, if mini-PCI cards are available for interconnection with a video camera, DVD player or other audio or visual equipment, then the appropriate jacks for these functions may also be integrated into the portable computer using the teachings provided herein. It is contemplated that many changes and modifications may be made by one of ordinary skill in the art without departing from the spirit and the scope of the invention described.

Claims Text - CLTX:

a flex cable with a first end and a second end, with the first end of said flex cable soldered to said metallic pins to form an electrical connection with said communication jack, and the second end of said flex cable includes a PCI card connector capable of connecting to a PCI card; and

Claims Text - CLTX:

3. An integrated connector module as in claim 2, further comprising a riser board attached to said support plate, said riser board extending generally parallel to said PCI card connector for supporting a PCI card.

Claims Text - CLTX:

4. An integrated connector module as in claim 3, wherein said riser board includes a connector assembly coupling the PCI card to a motherboard mounted within the computer housing.

Claims Text - CLTX:

5. An integrated connector module as in claim 4, wherein said riser board connector assembly includes a first connector that connects electrically to the PCI card, and a second connector that extends from said riser board to connect to the motherboard.

Claims Text - CLTX:

7. An integrated connector module as in claim 2, wherein said PCI card connector extends in a direction substantially opposite the front face of said communication jack.

Claims Text - CLTX:

a flex cable with a first end and a second end, with the first end of said flex cable soldered to said metallic pins to form an electrical connection with said communication jack, and the second end of said flex cable including a PCI card connector capable of connecting to a PCI card;

Claims Text - CLTX:

a riser board attached to said support plate, said riser board extending generally parallel to said PCI card connector for supporting a PCI card.

Claims Text - CLTX:

11. An integrated connector module as in claim 10, wherein said PCI card connector extends in a direction substantially opposite the front face of said communication jack.

Claims Text - CLTX:

12. An integrated connector module as in claim 11, wherein said riser board includes a connector assembly coupling the PCI card to a motherboard mounted within the computer housing.

Claims Text - CLTX:

13. An integrated connector module as in claim 12, wherein said riser board connector assembly includes a first connector that connects electrically to the PCI card, and a second connector that extends from said riser board to connect to the motherboard, and wherein said support board includes a standoff that attaches to the computer housing.

Claims Text - CLTX:

a flex cable with a first end and a second end, with the first end of said flex cable soldered to said metallic pins to form an electrical connection with said communication jack, and the second end of said flex cable includes a PCI card connector capable of connecting to a PCI card; and

Claims Text - CLTX:

19. A portable computer as in claim 18, wherein said PCI card connector extends in a direction substantially opposite the front face of said communication jack.

Claims Text - CLTX:

21. A portable computer as in claim 20, wherein the integrated connector module also includes a riser board attached to said support plate, with said riser board extending generally parallel to said PCI card connector for supporting a PCI card.

Claims Text - CLTX:

22. A portable computer as in claim 21, wherein said riser board includes a

connector assembly coupling the PCI card to said motherboard.

Claims Text - CLTX:

23. A portable computer as in claim 22, wherein said riser board connector assembly includes a first connector that connects electrically to the PCI card, and a second connector that extends from said riser board to connect to said motherboard.

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TITLE: Modular connector assembly for an electronic appliance

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INVENTOR-INFORMATION:

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US-CL-CURRENT: 439/676; 439/395 ; 439/76.1

ABSTRACT:

A modular connector assembly includes an insulating connector housing which is adapted to be mounted on a main circuit board of an electronic appliance that has an electronic component on the main circuit board. The connector housing is formed with a connector mating hole, and has a partition wall for defining a front chamber communicated with the connector mating hole, and a rear chamber. The partition wall cooperates with a bottom wall of the connector housing to define a channel for communicating the front and rear chambers. The bottom wall is formed with a plurality of terminal retaining grooves within the connector housing. A plurality of contact terminals have elongated main portions extending through the channel and retained in the retaining grooves. Each contact terminal has a resilient contact portion disposed in the front chamber and a cable connecting portion disposed in the rear chamber. A ribbon cable extends into the rear chamber, and has one end connected electrically to the cable connecting portions of the contact terminals and the other end adapted to be connected to the electronic component.

4 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

----- KWIC -----

TITLE - TI:

Modular connector assembly for an electronic appliance

Abstract Text - ABTX:

A modular connector assembly includes an insulating connector housing which is adapted to be mounted on a main circuit board of an electronic appliance that has an electronic component on the main circuit board. The connector housing is formed with a connector mating hole, and has a partition wall for defining a front chamber communicated with the connector mating hole, and a rear chamber. The partition wall cooperates with a bottom wall of the connector housing to define a channel for communicating the front and rear chambers. The bottom wall is formed with a plurality of terminal retaining grooves within the connector housing. A plurality of contact terminals have elongated main portions extending through the channel and retained in the retaining grooves.

Each contact terminal has a resilient contact portion disposed in the front chamber and a cable connecting portion disposed in the rear chamber. A ribbon cable extends into the rear chamber, and has one end connected electrically to the cable connecting portions of the contact terminals and the other end adapted to be connected to the electronic component.

Brief Summary Text - BSTX:

The present invention relates to a modular connector assembly for an electronic appliance, more particularly to a modular connector assembly which can be connected electrically to an electronic component of the electronic appliance without the need for forming a printed circuit on a main circuit board of the electronic appliance.

Brief Summary Text - BSTX:

FIG. 1 illustrates the connection between a conventional RJ11/RJ45 electrical connector 3 and a mini peripheral component interconnect (mini PCI) 2 provided on a main circuit board 1. The electrical connector 3 is suitable for mating with a complementary electrical connector 4, and is mounted on the main circuit board 1 adjacent to an edge portion of the latter by means of known soldering or surface mounting (SMT) techniques. The electrical connector 3 and the mini PCI 2 have contact terminals 31, 21 inserted through the main circuit board 1. The main circuit board 1 is provided with a printed circuit 11 for interconnecting electrically the contact terminals 21, 31 of the mini PCI 2 and the electrical connector 3.

Brief Summary Text - BSTX:

However, to form the printed circuit 11, a layout of the circuit should be designed beforehand, and the main circuit board 1 should undergo several treatment steps which include, for example, chemical etching. The contact terminals 21, 31 of the mini PCI 2 and the electrical connector 3 are subsequently welded to the main circuit board 1 to ensure electrical connection between the contact terminals 21, 31 and the printed circuit 11. These complicate the manufacturing process of the electronic appliance. Moreover, as the printed circuit 11 is exposed from the circuit board 1, the printed circuit 11 may possibly cause static discharge and electromagnetic interference within the electronic appliance to adversely affect the functions of other electronic components in the electronic appliance.

Brief Summary Text - BSTX:

Therefore, the main object of the present invention is to provide a modular connector assembly which can be connected electrically to an electronic component of an electronic appliance without the need for forming a printed circuit on a main circuit board of the electronic appliance.

Brief Summary Text - BSTX:

Accordingly, the modular connector assembly of the present invention is adapted for use in an electronic appliance having an electronic component on a main circuit board, and includes a connector housing, a plurality of contact terminals, and a ribbon cable. The connector housing is made of an electrically insulating material, and is adapted to be mounted on the main circuit board. The connector housing has a front end formed with a connector mating hole, a rear end opposite to the front end, parallel top and bottom walls extending between the front and rear ends, and a vertical partition wall extending downwardly from the top wall toward the bottom wall so as to define

within the connector housing a front chamber proximate to the front end and communicated with the connector mating hole, and a rear chamber proximate to the rear end. The partition wall has a lower end which is spaced apart from the bottom wall and which cooperates with the bottom wall to define a channel therebetween for communicating the front and rear chambers. The bottom wall is formed with a plurality of terminal retaining grooves within the connector housing. Each of the contact terminals has an elongated main portion extending through the channel and retained in a respective one of the retaining grooves and having front and rear ends, a resilient contact portion disposed in the front chamber and extending from the front end of the main portion toward the partition wall, and a cable connecting portion extending from the rear end of the main portion and disposed in the rear chamber. The ribbon cable extends into the rear chamber, and has one end connected electrically to the cable connecting portions of the contact terminals and the other end adapted to be connected to the electronic component on the circuit board.

Drawing Description Text - DRTX:

FIG. 2 is an exploded perspective view of a preferred embodiment of a modular connector assembly of the present invention;

Detailed Description Text - DETX:

Referring to FIGS. 2 to 4, the preferred embodiment of the modular connector assembly of the present invention is shown to include a connector housing 51, a plurality of contact terminals 52, a cover plate 53, and a ribbon cable 7.

Detailed Description Text - DETX:

FIGS. 3 and 4 illustrate the modular connector assembly of the present embodiment when applied to a main circuit board 1' of an electronic appliance. The main circuit board 1' is provided with an electronic component 2', such as a mini Peripheral Component Interconnect, having a socket connector 22. The connector housing 51 is adapted to be mounted on the main circuit board 1' by inserting the anchoring legs 511 into a pair of anchoring holes 12 formed in the main circuit board 1' so as to engage the anchoring holes 12. The cable connector 71 of the ribbon cable 7 is then mated with the socket connector 22 of the electronic component 2' to establish electrical connection therewith. In this manner, the main circuit board 1' need not be formed with a printed circuit to establish connection between the connector assembly and the electronic component 2', thereby avoiding the occurrence of static discharge and electromagnetic interference that are commonly encountered in the aforesaid prior art.

Claims Text - CLTX:

1. A modular connector assembly for an electronic appliance having an electronic component on a main circuit board, comprising:

Claims Text - CLTX:

2. The modular connector assembly as claimed in claim 1, wherein one of said connector mating portions of said connector housing is of an RJ11 type, and the other of said connector mating portions of said connector housing is of an RJ45 type.

Claims Text - CLTX:

3. The modular connector assembly as claimed in claim 1, wherein said ribbon cable includes a plurality of conductive wires, each of which has an insulating sheath, said cable connecting portion of each of said contact terminals having a forked end which pieces through said insulating sheath of a respective one of said conductive wires for connecting electrically with said ribbon cable.

Claims Text - CLTX:

4. The modular connector assembly as claimed in claim 1, wherein the other end of said ribbon cable is provided with a cable connector adapted to be connected to the electronic component on the circuit board.